

WHAT IS CLAIMED IS:

1. A flip-type terminal comprising:

a body including a position sensing receiver which is mounted to a main board;

a flip adapted for attachment to said body;

5 a slim-style first microstrip patch antenna which is mounted to said flip so that a portion of the microstrip patch antenna projects out of said flip to define a rectangular contour;

a hinge means for mechanically connecting said body and said flip so that said flip is pivotable from: 1) an open position wherein said flip projects out from the body at a predetermined angle relative to the body which permits optimal position sensing
10 communication by the microstrip patch antenna; and

2) a closed position wherein said flip is substantially parallel to said body so that the microstrip patch antenna is shielded between said flip and said body; and

an RF flexible printed circuit for electrically connecting the position sensing receiver and the microstrip patch antenna so that the printed circuit flexes as said flip is moved between
15 the closed position and the open position.

2. The flip-type terminal according to claim 1, wherein the positioning sensing receiver is a GPS receiver.

3. The flip-type terminal according to claim 1, wherein said flip includes an upper part and a lower part, and said lower part is attached to the upper part through a double-sided tape.

4. The flip-type terminal according to claim 3, wherein the upper part has a first
5 antenna housing for mounting the microstrip patch antenna.

5. The flip-type terminal according to claim 4, wherein the first antenna housing is integrally formed with the upper part of said flip.

6. The flip-type terminal according to claim 3, wherein the lower part of said flip has a second antenna housing for mounting the microstrip patch antenna.

7. The flip-type terminal according to claim 6, wherein the second antenna
10 housing is integrally formed with the lower part of said flip.

8. The flip-type terminal according to claim 3, wherein the lower part of said flip further comprises an RF flexible printed circuit housing for mounting the RF flexible printed circuit.

9. The flip-type terminal according to claim 2, wherein the GPS receiver is
15 positioned adjacent to a lower end of the body.

10. The flip-type terminal according to claim 2, wherein the RF flexible printed circuit has a first end which is connected to the microstrip patch antenna by solder, and a second end which is connected to the GPS receiver by a connector.

5 11. The flip-type terminal according to claim 1, wherein the hinge means pivotably connects said flip to said body at a lower end of said body.

12. The flip-type terminal according to claim 11, further comprising a second antenna for transmitting and receiving wireless communications other than a GPS signal, said
10 second antenna being arranged at an uppermost end of said body for transmitting and receiving wireless communications independent of a position and a communication status of said flip.

13. The flip-type terminal according to claim 12, wherein each of said first microstrip patch antenna and said second antenna are adapted to respectively transmit and to
15 respectively receive at frequencies which are different from each other.

14. The flip-type terminal according to claim 1, wherein the predetermined angle of said flip relative to said body in the open position is 130-150 degrees.

15. A method for providing a flip-type terminal comprising the steps of :

(a) providing a body including a position sensing receiver which is mounted to a main board, and a flip adapted for pivotable attachment to said body;

(b) mounting a slim-style microstrip patch antenna on a flip, so that a portion of the
5 microstrip patch antenna projects out of said flip to define a rectangular contour;

(c) pivotably attaching the flip to said body by a hinge means so that said flip is pivotable from: 1) an open position wherein said flip projects out from said body at a predetermined angle relative to said body for permitting optimal position sensing communication by the microstrip patch antenna; and 2) a closed position wherein said flip is
10 substantially parallel to said body so that the microstrip patch antenna is shielded between said flip and said body; and

(d) connecting electrically the position sensing receiver and the microstrip patch antenna with an RF flexible printed so that said printed circuit flexes as said flip is moved between the closed position and the open position.

16. The method according to claim 14, wherein the position sensing receiver provided in step (a) is a GPS receiver.

17. The method according to claim 15, wherein the flip provided in step (a) includes
20 an upper part and a lower part, and said method further comprises (i) attaching said lower part to the upper part by a double-sided tape.

18. The method according to claim 15, further comprising:

(e) providing a second antenna signal which is arranged at an uppermost end of said body for transmitting and receiving wireless communications other than a positioning sensing signal, wherein the transmitting and receiving of wireless communications other than a positioning sensing signal of said second antenna being independent of a position and a communication status of said flip.

19. The method according to claim 18, further comprising:

(f) providing that said microstrip patch antenna and said second antenna are adapted to respectively transmit at different frequencies and to respectively receive at different frequencies from each other.

20. The method according to claim 15, wherein the predetermined angle in the open position of the pivotably attached flip relative to the body recited in step (c) is approximately 130-150 degrees.